

Remarks

Claims 1-30 remain in the application.

An editorial error has been corrected in Claim 14.

The Examiner has rejected claims 1, 4, 7-10, 13-15, 17-20, and 22 under 35 U.S.C. §103(a) as being obvious over Niemirowski et al. (U.S. Patent 6,056,123, here after Niemirowski) in view of Ohsawa (U.S. Patent 6,033,215).

This rejection is traversed. All the rejected claims require that upper surface of the teeth except for the horizontal support surface slope upwardly at an angle of no more than 3°. Ohsawa shows in FIG. 7 support teeth formed with grooves including inclined surfaces in addition to horizontal support surfaces at the distal ends of the teeth. However, Ohsawa does not specify the inclination angle, but from many suggestions it appears to be substantially larger. The leftmost portion of FIG. 7 illustrates the angle at about 45°. Such a large angle is consistent with the relatively low aspect ratio of partially formed, horizontal slots 42, 44 illustrated in the middle portion of FIG. 7. For a somewhat different embodiment, Ohsawa states that the grooves have heights of 2.5mm and apparently radial depths of 10mm. The relatively shallow depths follow from Ohsawa's teaching at col. 6, ll. 32-50 with reference to FIG. 12 that the shear stress is reduced when the contact point is moved 15mm inwardly from the wafer edge. No greater depth is suggested. Furthermore, Ohsawa specifies at col. 6, ll. 51-56 that first the horizontal grooves are machined and then an inclined cutter 555 forms the inclined groove portions. As a result, Ohsawa's inclined cutter must reach beyond the horizontal support surface before it begins to undercut the previously horizontal bottom surface to place the horizontal support area 15mm from the wafer edge. The inclined cutting must continue to well beyond the wafer edge. Such a configuration is not easily achieved at low inclination angles, such as no more than 3°.

The Examiner states without citation that "angle of inclination of the teeth of Ohsawa encompasses the claimed range." This statement is traversed. It is not seen where Ohsawa states a range of inclination angles including angles of less than 3°. It is noted that the angle θ , which is illustrated in FIG. 13 as having values between 98° and 120° and described at col. 6, ll. 5-25, is a

central or azimuthal angle θ illustrated in FIG. 4 defined between two support surfaces and the waver center P. It has nothing to do with the tooth inclination angle.

Accordingly, as much as Ohsawa teaches about inclining his teeth, he does not suggest inclination angles of 3° or less. Niemirowski teaches both horizontal teeth and relatively short teeth. Accordingly, there is no suggestion in either reference for the claimed small inclination angles.

A new set of claims 24-30 have been added specifying that the upper and lower surfaces of the teeth be parallel and inclined except for the horizontal support areas on the upper surface. In contrast, Ohsawa's lower tooth surfaces have both horizontal and inclined portions. This configuration follows from Ohsawa's sequence of first cutting horizontal slots and then angle cutting those slots.

The Examiner has rejected claim 5 under 35 U.S.C. §103(a) as being obvious over Niemirowski in view of Ohsawa and further in view of Ballance et al. (U.S. Patent 6,395,363, hereafter Ballance). This rejection is traversed. This claim depends from a claim believed to be in allowable form and should therefore also be allowable. Furthermore, the polishing of Ballance's inclined surface 200, illustrated in FIG. 4 and described at col. 5, lines 50-64 differs in structure and effect from the polishing of support surfaces extending perpendicularly to the tower axis such that Ballance does not suggest polishing the claimed perpendicular support surfaces. To emphasize this point, new method claim 23 requires polishing in a plane perpendicular to the axis, clearly different from the polishing process of Ballance.

The Examiner has rejected claims 2, 3, 11, 12, and 16 over 35 U.S.C. 103(a) as being obvious over Niemirowski in view of Ohsawa and further in view of Zehavi (U.S. Patent 6,225,594). This rejection is traversed. First, these claims depend from claims believed to be in allowable form. Furthermore, the Zehavi reference issued on May 1, 2001 while the present application is a grandchild divisional of Serial No. 09/608,291, filed June 30, 2002. Accordingly, Zehavi is available as prior art only under 35 U.S.C. §102(e). However, both the present application and Zehavi are commonly assigned to Integrated Materials, Inc. and thus under 35 U.S.C. §103(c) Zehavi does not prevent patentability. The assignment for the Zehavi patent was recorded at Reel/Frame 010768/0621 on 25 April 2000. The assignment for the

grandparent of the present application was recorded at Reel/Frame 10908/0897 on 30 June 2000.

The Examiner has rejected claims 6 and 21 under 35 U.S.C. 103(a) as being obvious over Niemirowski in view of Ohsawa and further in view of Wingo. This rejection is traversed. First, these claims depend from claims believed to be in allowable form and should therefore also be allowable. Furthermore, the very wide range of 25% and 90% of the radius over which Wingo's support rail extends does not render obvious the narrowly claimed range of 69% to 72% of the radius.

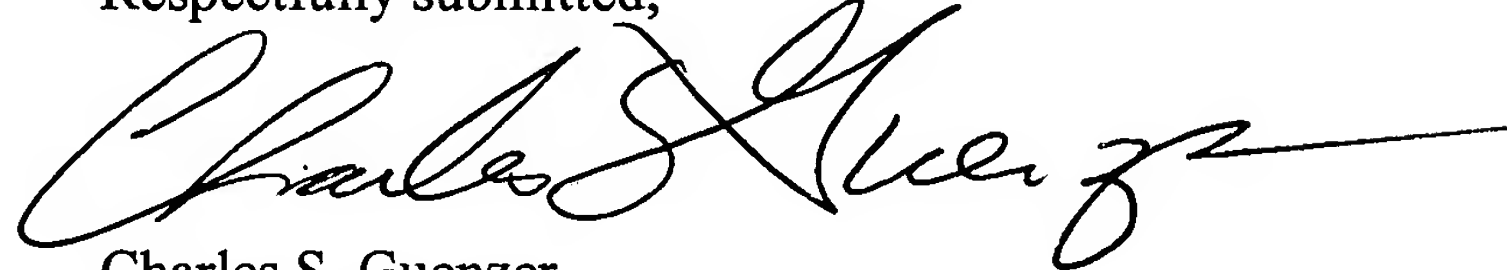
In view of the above amendments, consideration and allowance of all claims are respectfully requested. If the Examiner believes that a telephone interview would be helpful, he is invited to contact the undersigned attorney at the listed telephone number, which is on California time.

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